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ANNUAL REPORT
FY93

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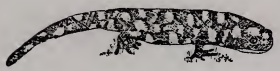

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MONTANA

WILDLIFE MITIGATION PROGRAM

ANNUAL REPORT

FY93

Prepared By

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Introduction

Two units of the Columbia River Hydroelectric system, Libby and Hungry Horse dams, occur in western Montana. Together these dams flooded over 50,000 acres of prime wildlife habitats (Yde and Olsen 1984 and Casey et al 1984). An additional 2,100 acres of productive habitats were lost due to activities associated with hydroelectric development including road and railroad relocations and new road construction. The Northwest Power Act (1980) established the Northwest Power Planning Council and charged it with developing a program to protect, mitigate and enhance fish and wildlife and habitat affected by hydroelectric development. Montana's wildlife mitigation program was developed following procedures established by the Council.

In December 1988, the State of Montana, Montana Department of Fish, Wildlife and Parks, and Bonneville Power Administration signed the Wildlife Mitigation Agreement for Libby and Hungry Horse Dams (Settlement Agreement). This agreement established a trust account which would be used to finance wildlife mitigation projects.

The wildlife mitigation program is being implemented under the guidance of a five-year operating plan (Nyberg 1992). Three mitigation projects were underway in FY93: the Libby Habitat Enhancement Project, the Hungry Horse Habitat Enhancement Project and the Habitat Protection Project. This report summarizes activities completed during the period July 1,1992 through September 30, 1993.

WILDLIFE AND WILDLIFE HABITAT LOSSES

The process used to determine wildlife and wildlife habitat losses at Libby and Hungry Horse dams was described in earlier reports (Yde and Olsen 1984 and Casey et al 1984, respectively). These reports identified the loss of 52,600 acres of productive wildlife habitats (Table 1). Most of the current effort is aimed at providing replacement habitats similar to those lost by enhancing National Forest lands adjacent to the reservoirs. We are also evaluating the effects of that work on key wildlife species or groups of species.

Table 1. Acres of Habitat Mapping Units included in the loss estimates for Libby and Hungry Horse Dams, Montana (Casey et al 1984 and Yde and Olsen 1984, respectively).

Habitat Mapping Unit	Hungry Horse	Libby	Total
Aquatic			
River/Stream	702	3,285	3,987
Pond/Lake	54		54
Marsh/Slough	147	29	176
Total Aquatic Habitats	903	3,314	4,217
Terrestrial			
Gravel Bar	532	955	1,487
Upland Grasslands	634	1,583	2,217
Upland Shrub	5,713	159	5,872
Riparian Habitats			
Deciduous Shrub Riparian	1,077	667	1,744
Deciduous Tree Riparian	100	873	973
Mixed Riparian Forest	3,619	2,511	6,130
Sub-irrigated Grassland	179	3,404	3,583
Total Riparian	4,975	7,455	12,430
Coniferous Forest			
Warm, Dry Conifer		7,159	7,159
Cool/Dry Douglas Fir		448	448
Cool/Moist Douglas Fir		5,143	5,143
Cold/Dry Subalpine Conifer		60	60
Warm/Moist Conifer		2,149	2,149
Dense Seral LPP Forest	229		229
Old Growth Coniferous Forest	568		568
Unspecified Conifer Forest	10,126		10,216
Total Conifers	10,923	14,959	25,882
Talus/Eroded Slopes	70	16	86
Developments		409	409
TOTAL	23,750	28,850	52,600
Islands *	32 (307)	47 (1,689)	79 (1,996)

* Data are numbers (acres) of islands. The acreages of specific habitats on the islands were included above.

LIBBY HABITAT ENHANCEMENT PROJECT

This project was designed primarily to improve existing big game winter ranges on National Forest lands adjacent to Lake Koocanusa. Historically, the lower south and southwest facing slopes above the Kootenai River which provided big game winter range were open Ponderosa pine forests maintained by frequent wildfire. Between 1940 and 1977, 53 lightning fires were reported on the historic bighorn sheep winter range. Before the advent of effective fire suppression, these lightning caused fires would have continued to burn, halting normal plant succession and maintaining the open Ponderosa pine forest. These open forests with a grassland or shrubland understory provided the forage needed by wintering big game and also provided a unique and valuable habitat for a wide variety of adapted wildlife species.

The wildlife losses and mitigation goal, projects and schedule from Table 4 in the Fish and Wildlife Program (NPPC 1987) are as follows:

WILDLIFE OR HABITAT LOSS	MITIGATION GOAL, PROJECT/SCHEDULE
66 bighorn sheep, 3,190 acres of winter range, and 485 mule deer, 10,586 acres of winter/spring range	BPA shall fund projects to enhance and maintain winter/spring ranges on Kootenai National Forest lands adjacent to Lake Koocanusa to support target carrying capacities of an additional 66 sheep and 485 mule deer. Total number of acres to be treated will be established when the increase in carrying capacity for habitat enhancement is determined. An initial limit of 3,190 and 10,586 acres, respectively for bighorn sheep and mule deer, will be enhanced until increased carrying capacity is determined. Year 1, advance design. Years 2-10 implement and monitor.

This is a cooperative project between the Kootenai National Forest and the Montana Department of Fish, Wildlife and Parks (MDFWP). The Forest Service has primary responsibility for implementing individual enhancement projects. The department's primary responsibility is to evaluate the effectiveness of the enhancement project. The evaluation portion of the project is designed to determine when the projected (33%) increase in carrying capacity is achieved and to guide future enhancement efforts. Site specific data will be used to determine the total number of acres of habitat which need to be improved to accomplish mitigation goals. Because these are cooperative projects, personnel from both agencies actively participate in all phases of project implementation.

Activities during FY93 focused on implementing habitat enhancement projects and determining the size and composition of the mule deer and bighorn sheep populations. The major accomplishments are listed below.

HABITAT ENHANCEMENT

Habitat enhancement activities were planned on 3,747 and completed on 2,711 acres (Table 2). Activities included interdisciplinary review, layout and cultural resources

Table 2. Annual work plan and accomplishments, Libby Habitat Enhancement Project, FY93.

TASK	UNIT	NAME	ACRES	TREATMENT TYPE	ACTIVITY	LAYOUT	ACRES SLASH	BURN
3.8 [1]	AX8	Alexander Creek	129	Slash/Burn	Burning			0
3.12	GB8	Greens Basin	329	Slash/Burn	Layout/Slash [2]	329	0	
3.19	WC4	Warland Creek	80	Underburn	Burning			0
	WC5	Warland Creek	120	Slash/Burn	Burning			0
4.8	MFP2	Paranip Creek	86	Slash/Burn	Burn			86
4.9	PC9	Paranip Creek	89	Slash/Burn	Burn			137
4.12	F11	Bluesky Creek	100	Underburn	Burn			0
4.14	F10	Bluesky Creek	104	Underburn	Burn			0
5.2	CH19	Cripple Horse Cr	180	Slash/Burn	Slash		180	
5.3	BD1	Boulder Creek	303	Slash/Burn	Slash/Timber Sale	303	0	
5.4	CB4	C Branch	235	Slash/Burn	Slash	235	235	
5.5	STH2	Stone Hill	291	Slash/Burn	Slash		291	
5.8	CG5	Canoe Gulch	125	Underburn	Burn			125
5.7	CG14	Canoe Gulch	75	Underburn	Layout	75		
5.8	CC6	Canyon Creek	97	Underburn	Burn			97
	CC7	Canyon Creek	50	Underburn	Burn			50
6.2	BA2	Barron Creek	228	Slash/Burn	Layout	228		
	BA3	Barron Creek	21	Slash/Burn	Layout	21		
6.4	R3	Rainy Creek	47	Underburn	Burning			0
6.5	R5	Rainy Creek	101	Underburn	Burning			0
6.6	AX5	Alexander Creek	57	Slash/Burn	Layout/Slash	57	57	
6.7	CH14	Cripple Horse Cr	70	Slash/Burn	Layout	70		
6.11	TM1	Tenmile Creek	72	Slash/Burn	Layout	72		
6.12	SP1	Sutton/Peck	169	Slash/Burn	Layout/Slash	169	169	
6.14	CG8	Canoe Gulch	254	Underburn	Burn			254
6.15	WC1	Warland Creek	112	Underburn	Layout	112		
6.16	GB1	Greens Basin	223	Slash/Burn	Slash		223	
		Totals	3,747			1,671	1,155	749

1. Task numbers refer to the Kootenai River Wildlife Habitat Enhancement Project.
2. Work on this unit accomplished in both FY92 and FY93.

review on 1,671 acres of proposed treatment areas, 1,155 acres of slashing and 749 acres of prescribed burning (Table 2).

TIMBER HARVEST

Habitat enhancement activities occurred on portions of 14 timber sale units (Table 3). Broadcast burning to reduce logging slash and stimulate forage production was conducted on 5 units after logging was completed. Three units were logged and 4 additional units were prepared for sale. Planning for a timber sale at unit ZV1 was initiated. These activities were funded by the Kootenai National Forest as part of their ongoing timber sale program.

Table 3. Summary of wildlife habitat enhancement activity in timber sale units included in the Long-term Enhancement Plan on Kootenai NF during FY93. [1]

TASK	UNIT	LOCATION	SALE NAME	UNIT AREA	ACTIVITY
2.2	F1	Fivemile Creek	----------	149	Burned Unit 2
2.5	BA1	Barron Creek	Foreverett Salvage	147	Burned Unit 5
2.6	S1	Souse Gulch	----------	98	
2.7	ZV1	Zeigler View	West Koot. Helic.	100	Burned
3.3	LJ3	Little Jackson Cr	Bugged Out	25	Burned Unit 1
3.6	F33	Fivemile Creek	Mineral Sheep	44	Logged Unit 3
4.2	JC8	Jackson Creek	Fleetwood Jackson	22	Logged Unit 2
4.3	F19	Fivemile Creek	Fivemile Hellcopter	203	Logged Unit 6
5.1	WCT3	Warland Creek	Ant Wildlife	136	Sale Prep Units 2,3
	WCT5	Warland Creek		45	Sale Prep Unit 5
	WCT6	Warland Creek		125	Sale Prep Units 6,7
6.3	ZV3	Zeigler View	----------	71	Layout
6.16	GB1	Greens Basin	Green's DF	223	Sale Prep
8.1	F6	Fivemile Creek	Sten Again	191	Burned
		TOTALS		1,581	

1. This table includes work done in FY93; other tasks may have been done in earlier years or remain to be done in subsequent years. Each task may involve more than one treatment unit.

EVALUATION

A concerted effort was made to capture and mark mule deer and bighorn sheep to use in calculating mark-resighting population estimates. Twenty-one clover trapsites were established in the core monitoring area. We captured 324 mule deer and 20 bighorn sheep during 615 trap-nights of effort (Nyberg and Brown 1994). Blue ear streamers (2 x 8 inch) were placed on 159 mule deer and 14 bighorn sheep. In addition, radio transmitter collars were placed on 17 mule deer and 4 bighorn sheep. Ten animals (2.9%) died during trapping operations.

Animal distribution and limited habitat use data were collected during monthly radio collar relocation flights. Movement patterns reflected those previously reported (Yde et al

1991). Fifty-nine bighorn sheep were seen and classified during a total-coverage survey of the herd range on January 6, 1993. The population size was estimated at about 148 animals based on an average observability of 42% during early winter. A total-coverage helicopter survey of the core monitoring area was conducted on April 20, 1992. A total of 164 mule deer and 9 bighorn sheep were observed. The mule deer population was estimated at approximately 548 animals based on sighting of 45 of 152 blue ear streamered animals. We did not observe enough bighorn sheep during the April survey to calculate a population estimate.

PLANNING FOR FY93 PROJECTS

Kootenai National Forest, Confederated Salish and Kootenai Tribes and MDFWP personnel conducted pre-treatment field reviews of units scheduled for FY's 93 and 94.

MAJOR ACTIVITIES PLANNED FOR FY94

HABITAT ENHANCEMENT

Work is planned on about 4,491 acres of wildlife habitat in FY94 (Tables 4 and 5). That total includes interdisciplinary team review and layout on 3,245 acres, 1,647 acres of slashing and 2,382 acres of prescribed burning.

Pre-treatment surveys of units scheduled for completion in FY94 and 95 will be conducted by the interdisciplinary team during FY94.

Table 4. List of tasks to be completed in FY94, Kootenai NF, from the Long-term Plan.

					ACRES		
TASK	UNIT	NAME	ACRES	TREATMENT	LAYOUT	SLASH	BURN
3.8	AX8	Alexander Creek	129	Slash/Burn			129
3.19	WC4	Warland Creek	80	Underburn			80
	WC5	Warland Creek	120	Slash/Burn			120
3.21	TM5	Tenmile Creek	100	Slash/Burn	100		100
4.12	F11	Bluesky Creek	100	Underburn			100
4.14	F10	Bluesky Creek	104	Underburn			104
5.2	CH19	Cripple Horse	180	Slash/Burn	180		180
5.3	BD1	Boulder Creek [1]	303	Timber Harvest	303	303	
5.4	CB4	C-Branch	235	Slash/Burn			235
5.5	STH2	Stone Hill	291	Slash/Burn			291
5.7	CG14	Canoe Gulch	80	Underburn			80
6.4	R3	Rainy Creek	134	Slash/Burn			134
6.5	R5	Rainy Creek	95	Slash/Burn			95
6.6	AX5	Alexander Creek	57	Slash/Burn			57
6.7	CH14	Cripple Horse	70	Slash/Burn			70
6.8	PL2	Phills Lake	218	Slash/Burn	218	218	
6.9	PL8	Phills Lake	100	Slash/Burn	100	100	
6.10	ROG1	Rocky Gulch	63	Slash/Burn	63	63	
6.11	TMI	Tenmile Creek	72	Slash/Burn	72	72	
6.12	SP1	Sutton/Peck Creek	169	Slash/Burn	169	169	169
6.13	LD14	Horse Range	370	Underburn	370		
6.15	WC1	Warland Creek	112	Underburn			112
6.16	GB1	Green's Basin	223	Underburn	223	223	223
7.1	WCT7	Warland Creek [1]	170	Timber Harvest	170		
	WCT10	Warland Creek [1]	190	Timber Harvest	190		
	WCT11	Warland Creek [1]	111	Timber Harvest	111		
	WCT12	Warland Creek [1]	282	Timber Harvest	282		
7.6	BC11	Big Creek	396	Slash/Burn	396	396	
7.7	PC2	Parsnip Creek	103	Slash/Burn	103	103	103
7.9	CG1	Canoe Gulch	160	Underburn	160		
7.10	Z7	Zeigler	100	Underburn	100		
		Totals	4,491		3,245	1,647	2,382

1. Timber sale opportunity was identified during preliminary IDT Review.

Table 5. Estimated costs of implementing the annual work plan for Libby Habitat Enhancement, FY94.

ACTIVITY	ACRES	D-1 COST	D-5,6 COST	TOTAL COST
Layout	3,175	$ 28,117	$ 18,796	$ 46,913
Slashing	1,412	$ 53,000	$ 0	$ 53,000
Burning	2,159	$ 40,905	$ 37,512	$ 78,417
Subtotal		$122,022	$ 56,304	$178,330
FS Overhead		$ 22,196	$ 10,243	$ 32,439
TOTAL	4,491	$144,218	$ 66,551	$210,769

1. Costs are estimates and may vary depending on site specific conditions.

EVALUATION

In FY94 the evaluation segment of the project will again focus on developing estimates of the mule deer and bighorn sheep populations. Following the 1994 trapping season, the results of this and other monitoring activities will be compiled and evaluated. The extent of future monitoring efforts will be based on recommendations in that evaluation. A budget summary for fiscal years 93 and 94 is in Table 6. The major activities are listed below:

1. Trap and mark mule deer and bighorn sheep on the Tenmile - Rocky Gorge core area.

2. Relocate radio-collared animals monthly to determine movements, distribution and habitat use to provide data which will be used to evaluate the effectiveness of various habitat improvement activities.

3. Conduct early- and late-winter helicopter surveys to determine population size and composition.

4. Maintain current data files and analyze data to document effects of habitat improvement projects on bighorn sheep and mule deer populations.

5. Coordinate implementation activities with Forest Service Personnel.

6. Complete annual report summarizing results of population and distribution surveys.

Table 6. Budget summary for Mule Deer Monitoring Project, FY93 and 94.

Budget Category	FY93 (Planned)	FY93 (Actual)	FY94 (Planned)
PERSONAL SERVICES	$11,563	$11,192	$10,144
OPERATIONS AND MAINTENANCE	$12,300	$12,721	$12,300
EQUIPMENT	$0	$0	$0
Sub-total	$23,863	$23,914	$22,444
DEPARTMENT OVERHEAD	$4,606	$4,615	$2,446
TOTAL	**$28,469**	**$28,529**	**$24,890**

HUNGRY HORSE HABITAT ENHANCEMENT PROJECT

This project was designed primarily to mitigate the loss of seral shrubfields used as elk winter range. It addresses the second highest priority mitigation project listed in the Wildlife and Wildlife Habitat Mitigation Plan for Hungry Horse (Bissell and Yde 1985). Other target species listed in the mitigation plan will also benefit, including: mule deer, black bear, grizzly bear, white-tailed deer, mountain lion, lynx and mountain grouse. A wide variety of small mammals and song birds which use shrubfields and forest openings should also benefit from the enhancement efforts.

The specific wildlife losses and mitigation goal, projects and schedule from Table 4 in the Council's Fish and Wildlife Program (NPPC 1987) are as follows:

WILDLIFE OR HABITAT LOSS	MITIGATION GOAL, PROJECT, SCHEDULE
133 elk, 6,650 acres of winter range	BPA shall fund projects to enhance and maintain winter range on Flathead National Forest lands to support a target carrying capacity of an additional 133 elk. Total number of acres to be treated will be established when the increase in carrying capacity for habitat enhancement is determined. An initial limit of 6,650 acres will be enhanced until increased carrying capacity is determined. Year 1, advance design. Years 1-5 implement, test and monitor; report to Council for further action.

This is a cooperative project implemented by the Flathead National Forest and the Montana Department of Fish, Wildlife and Parks (MDFWP). The Forest Service has primary responsibility for implementing individual habitat projects while the Department has primary responsibility to monitor and evaluate the effectiveness of the habitat enhancement work. Because this is a cooperative project, personnel from both agencies actively participate in all aspects of the project.

Activities during FY93 focused on implementing the habitat enhancement plan, evaluating vegetation and animal responses to treatment projects and continuing to gather baseline data on elk populations. The latter will ultimately provide the basis for evaluating success toward achieving the mitigation goal of increasing the elk carrying capacity by one-third.

During FY92, a decision was made to reduce the monitoring and evaluation effort at the Libby project area. Since then, the Hungry Horse monitoring and evaluation program has been expected to provide information which can also be used to evaluate the success of the Libby project.

HABITAT ENHANCEMENT

Habitat enhancement activities were planned on 207 acres and accomplished on 194 acres on the Firefighter Mountain winter range (Table 7). That included 10 acres of browse

slashing and 162 acres where non-merchantable trees were slashed. Two units, 22 acres, which had been logged for posts and poles during FY92 were broadcast burned. Units 16 and 25, which had been scheduled for browse slashing, were not completed. Unit 16 was dropped following field recon which indicated the unit did not have an adequate number of forage shrubs. Following field review, we decided to offer Unit 25 as a post and pole sale. After the sale, the entire unit will be broadcast burned. The total expenditure for non-timber sale habitat enhancement activities was $11,496 (Table 8). Costs were borne by the department's Wildlife Mitigation Trust Account.

Table 7. Habitat enhancement projects completed during FY93, Hungry Horse Ranger District, Flathead NF.

			Treatment Acres		
Task	Unit	Location	Slash Shrubs	Slash Trees	Burn
1.6	F	Green Slope		12	
1.19	9	Firefighter Mtn	10		
1.21	11	Point		104	
1.27	18	Hungry Horse Creek Bay		20	
1.28	21	Firefighter Mtn		12	
1.29	22	Firefighter Mtn		14	
1.51	51	Spring Meadow Creek [1]			15
1.52	52	Spring Meadow Creek [1]			7
TOTAL			10	162	22

1. Post and pole unit harvested during FY92.

Table 8. Actual cost of implementing the annual work plan for Firefighter, FY93.

ACTIVITY	ACRES	FWP TRUST	TOTAL
Slash Shrubs	10	$556	$556
Slash Trees	162	$10,236	$10,236
Controlled Burn	22	$704	$704
TOTALS	**194**	**$11,496**	**$11,496**

TIMBER SALE

The Firefighter - BPA timber sale was sold by sealed bid on October 21, 1992. Timber harvest occurred on 191 acres during 1993, including 158 acres of sawlogs and 33 acres of posts and poles (Table 9). The remaining 218 acres of sawlogs in the east division of the timber sale will be logged during FY94. Additional post and pole units will be offered for sale in FY94.

Table 9. Timber sale activity completed during FY93, Firefighter Mountain.

TASK	UNIT	LOCATION	Sawlog	Post/Pole
1.39	34	Fire Creek	7	
1.41	36	Spring Meadow Creek	8	
1.43	38	Fire Creek	15	
1.45	42	Spring Meadow Creek	14	
1.46	44	Spring Meadow Creek	18	
1.47	47	Spring Meadow Creek		18
1.48	48	Ada Creek	16	
1.50	50	Spring Meadow Creek	18	
1.53	53	Ada Creek		15
1.54	54	Spring Meadow Creek	20	
TOTAL			158	33

EVALUATION

Results of monitoring studies are fully reported in Vore and Malta (1994). Portions of the executive summary are included here.

A marked sample of approximately 45 elk has been used to monitor the wintering elk population at Firefighter. This winter range is inhabited by approximately 170+30 elk, most of which are resident animals. Two winter herd units have been identified which are likely to benefit from the habitat enhancement efforts. The 1993 population estimates was 106+20 elk. This low estimate was due to elk moving off the study area.

Calf and bull per 100 cow ratios were 30.2 and 15.6 respectively in 1993 and averaged 39.9 and 14.9 since 1989. Ratios among elk observed on summer/fall range were 50.5 calves and 35.0 bulls per 100 cows. Among 23 marked reproductive-age cows 52.2% were thought to have reared calves to 2-3 months of age. Based on observations of marked cows and differences between summer/fall and winter classifications, it is suggested that some cows

may be losing their calves during summer. The high degree of variability in classifications (coefficient of variation = 31% for calf and 62% for bulls per 100 cows) underscores the need for repeated sampling.

Mortality among all 45 marked elk on Firefighter was 20% during the report period. Sixty-seven percent of mortality was hunting related. Among cows, mortality was 19% with 63% of that hunting related. For 2 radio collared bulls known to be in the population mortality was 100%, all hunting-related.

Initial sightability models developed for Firefighter (Casey and Malta 1990c) were updated; sightability has averaged 22% over 6 winters. Sightability was strongly correlated with both group size (r^2=.7349, p=.0068) and canopy cover (log 10 transformed data, r^2=.994, p=.0000), but these relationships have not yet been combined into a predictive model. Data suggest that use of dense habitats by larger cow/calf groups plays an important role in the sightability of elk at Firefighter. Among groups of <7 elk, the relationship between group size and sightability was strong (r^2=.992, p=.0000).

Indices of habitat based on pellet-group data continued to show heavy use of natural openings as compared to forested habitats. Use of proposed enhancement sites (timer sale units) averaged well below random forested sites based on pellet-group data, indicating such sites are currently underutilized by elk.

Data collection and analysis for the Spotted Bear winter range continues to be de-emphasized as Firefighter receives the focus of enhancement (and therefore monitoring and evaluation) efforts. We now estimate the wintering population at Spotted Bear to be over 1000 elk.

Vegetation monitoring efforts focused on treatment areas at Firefighter during 1991 and 1992. Browse-utilization transect data indicate preferred browse species are generally in poor condition in natural openings used by elk, and are present as a minor component of the shrub layer in timbered sites scheduled for treatment. Servicberry, willow, redstem ceanothus, maple and rose continue to be preferred species where available. Preliminary analysis of vegetation response to treatment (slashing and burning) in 2 natural openings suggest that the relative abundance of plants did not change, while annual growth of leaders responded favorably by increasing an average of 123 and 358 mm.

Investigation of elk food habits by microhistological analysis of feces showed that pacific yew and Oregon grape were the most common winter food items eaten at Firefighter while Douglas-fir and Western larch were the most common at Spotted Bear. Browse transects have shown willow, redstem ceanothus and rose to be favorite food items. Reasons for the apparent discrepancy between the two methods are discussed.

In FY94 population monitoring will include continued efforts to increase the sample size of marked elk at Firefighter and restore an adequate sample size at Spotted Bear. An attempt will be made this winter to net gun elk from a helicopter to increase trapping efficiency, select

study animals, and free time for other project activities. We will continue to collect data for mark / resighting estimates and to develop a sightability model. Approximately 40-50 pellet-group surveys will be conducted annually to monitor elk distribution and habitat use relative to enhancement sites. Monthly pellet samples will also be collected during winter months to determine seasonal food preferences at Firefighter and Spotted Bear. Twenty or more treatment and control sites will be sampled for vegetation response on an annual basis using the USFS ECODATA Ocular and Short Nested Microplot methods. Additional browse transects will be conducted to monitor utilization and vigor of preferred browse species.

MAJOR ACTIVITIES PLANNED FOR FY94:

HABITAT ENHANCEMENT

Habitat enhancement activities are planned on 12 units (138 acres), including 9 units (106 acres) of broadcast burning and 3 units (32 acres) of slashing non-merchantable doghair lodgepole pine (Table 10). In addition, an elk-proof exclosure will be constructed in Unit A to determine the effect of elk on the vegetation response. Ten acres (Unit D) will be seeded and fertilized to compare the response of native and introduced vegetation and the response of elk to the seeded foraging area. The projected cost to implement the FY94 work plan is $16,181 (Table 10).

EVALUATION

The monitoring and evaluation project will be a continuation of the ongoing program. Specific major tasks to be completed are listed below and projected costs of the program are given in Table 11.

1. Trap and mark to maintain representative samples of elk at Firefighter and Spotted Bear Winter Ranges.

2. Relocate radio-collared elk every two weeks to determine movements, distribution and habitat use to provide data which will be used to evaluate the effectiveness of various habitat improvement activities.

3. Conduct paired fixed-wing and annual helicopter surveys to determine population size and composition.

4. Conduct Ecodata plots in a representative sample of treatment and control areas to determine vegetation response to habitat improvement activities.

5. Coordinate implementation of work plans, budgets and habitat improvement projects with Forest Service personnel.

6. Maintain current data files and analyze data to document effects of habitat improvement projects on elk and vegetation.

7. Initiate planning for elk winter range enhancement projects on other ranger districts on Flathead National Forest as opportunities arise.

Table 10. Habitat enhancement work planned on the Firefighter Mountain winter range, FY94.

			TREATMENT ACRES			
TASK	UNIT	LOCATION	BROAD-CAST BURN	SLASH TREES	OTHER	PLANNED COST
1.1	A	Spring Meadow Creek [1]	11			$1,373
1.1	A	Spring Meadow Creek			[2]	$1,996
1.4	D	Green Slope [1]	10			$409
1.4	D	Green Slope			10 [3]	$1,015
1.6	F	Green Slope	12			$1,300
1.28	21	Firefighter Mountain	12			$1,300
1.29	22	Firefighter Mountain	14			$1,300
1.34	27	Spring Meadow Creek		10		$1,973
1.36	29	Ada Creek		10		$1,973
1.39	34	Fire Creek	7			$0 [4]
1.41	36	Spring Meadow Creek	8			$0 [4]
1.45	42	Spring Meadow Creek	14			$0 [4]
1.47	47	Spring Meadow Creek [1]	18			$1,569
1.49	49	Ada Creek		12		$1,973
		TOTAL	106	32		$16,181

1. The Flathead NF will pay approximately 40% of project cost using KV funds derived from the timber sale.
2. Construct elk proof exclosure to determine the effects of elk browsing on forage response.
3. Seed and fertilize to evaluate elk response.
4. Post-sale broadcast burn will be paid for by BD funds collected as part of sale.

Table 11. Budget summary for Hungry Horse Elk Project, Fiscal Years 93 and 94.

Budget Category	FY93 (Planned)	FY93 (Actual)	FY94 (Planned)
PERSONAL SERVICES	$60,961	$55,223	$75,545
OPERATIONS AND MAINTENANCE	$19,400	$18,920	$15,900
EQUIPMENT	$500	$757	$0
sub-total	$80,861	$74,900	$91,445
DEPARTMENT OVERHEAD	$15,606	$14,456	$9,968
TOTAL	**96,467**	**$89,356**	**$101,413**

HABITAT PROTECTION PROJECT:

This project was designed primarily to protect riparian, wetland, palouse prairie, and mature/old growth forest habitats. It addresses the first, fourth and sixth priorities listed in the Hungry Horse Mitigation Plan (Bissell and Yde 1985) and the fourth, fifth and seventh priorities listed in the Libby mitigation plan (Mundinger and Yde 1985).

The habitats featured in this project are considered high priority, and many of the associated wildlife species are designated as Threatened or Endangered, Sensitive or Species of Special Concern or are the object of nationwide protection and restoration programs. This project will benefit a wide variety of the species affected by hydroelectric development, including: black and grizzly bears, waterfowl, Columbian sharp-tailed grouse, terrestrial furbearers, numerous small mammals and birds associated with palouse prairie, riparian and old growth habitats, mule deer, elk, white-tailed deer, mountain lion, mountain grouse, aquatic furbearers, bald eagle and osprey.

The wildlife and habitat losses and mitigation goal, projects and schedule from Table 4 of the Fish and Wildlife Program (1987) are as follows:

WILDLIFE OR HABITAT LOSS	MITIGATION GOAL, PROJECTS, SCHEDULE
Columbian sharp-tailed grouse: 2,462 acres.	BPA shall fund projects to protect 2,462 acres of prairie habitat within the vicinity of the Tobacco Plains. Year 1-2, advanced design. Years 3-10, acquire easements.
Waterfowl: 4,564 acres of prime habitat.	BPA shall fund projects to protect and/or enhance 4,564 acres of prime wetlands in the flathead Valley. Years 1-2, advanced design. Years 3-10, upon completion of design, implement projects.
Grizzly Bears: 2-4 animals,8,590 acres of critical habitat, and Black Bears: 27-34 animals, 8,590 acres of critical habitat.	BPA shall fund projects to protect 8,590 acres of riparian habitat and travel corridors through the acquisition of conservation easements. Years 1-2, advanced design; interagency coordination; prioritizing sites; appraisals. Upon completion, acquire easements.
Terrestrial Furbearers: 11,050 acres of old growth forest stands.	Bonneville shall negotiate cooperative agreements with state and federal agencies and private landholders to protect 11,050 acres of selected old growth forest stands. Years 1-2, advanced design; report to council for further action.

This project is being implemented with the aid of Technical Committees in each area of emphasis and an overall Habitat Protection Committee (HPC). The technical committees are teams of biologists representing agencies or private conservation groups which have expertise and/or management authority over the particular species or group. These committees meet on an ad-hoc basis and assist in refining the overall goals and objectives of the project as well as evaluating specific implementation proposals. In addition, these committees include potential cooperators who may be able to contribute financially or otherwise to accomplishing the mitigation goals.

The Habitat Protection Committee (HPC) includes individuals representing a broad spectrum of agencies or groups likely to be affected by the implementation of habitat protection projects. This group provides a first-line public involvement forum. The social and political bounds of the decision space are refined in this forum. Specific habitat protection proposals are brought before this group which discusses the broader ramifications of the project. The HPC confirms a project is consistent with the mitigation program and may recommend the department accept, reject or modify the project proposal. Recommendations from this group are carried forward to the Wildlife Mitigation Advisory Committee for their input. After considering the input of the WMAC, the Department makes the final decision on whether or not to proceed with a project.

Activities during FY93 focused on evaluating six wetland habitat enhancement projects on either National Forest or Fish and Wildlife Service Waterfowl Production Areas, acquiring a Department of State Lands habitat protection lease, evaluating weed control projects, negotiating an easement on 680 acres of land controlled by The Nature Conservancy and writing a Wetland / Riparian Habitat Mitigation Implementation Plan.

PALOUSE PRAIRIE HABITAT

Three projects were acted upon during FY93: the Department of State Lands (DSL) Lease, The Montana Nature Conservancy (TNC) Weeds (Sulfur Cinquefoil) Project and the TNC Easement Project.

DSL LEASE

On June 24, 1993, the department applied to lease approximately 503 acres of State Land in Section 16, Township 37 North, Range 27 West. The habitat would be enhanced and managed to provide suitable habitat for Columbian Sharp-tailed grouse and other palouse prairie dependent species. This tract would add to a complex of habitats managed for palouse prairie habitat values by the Kootenai National Forest, The Nature Conservany and the department. To date, the Department of State Lands has not made a final decision on our lease application.

TNC WEEDS

On April 19, 1993, the department made a formal decision to provide funding for a project to control sulfur cinquefoil on The Nature Conservancy's Dancing Prairie Preserve. This preserve was established to protect the largest known population of a globally threatened plant species, Spalding's Catchfly (Silene spaldingii), and will protect habitat values for grassland wildlife species including Columbian sharp-tailed grouse. The project was successfully completed in May 1993.

TNC EASEMENT

In September 1990, The Nature Conservancy formally asked the department to cost share the acquisition of 680 acres of palouse prairie habitat in the Tobacco Plains. This tract included the last known Columbian sharp-tailed grouse dancing ground in Montana and the

largest known population of Spalding's catchfly. Department and TNC personnel met in April 1993 and agreed to investigate the feasibility of the department purchasing a conservation easement to protect sharp-tailed grouse habitat values from TNC. The TNC field representative was directed to contract for an easement appraisal. That appraisal is currently being completed. In November 1993, the Wildlife Mitigation Advisory Committee supported a department recommendation to proceed with the conservation easement once a value is determined. A final decision will be made once the easement value is known.

WETLANDS / RIPARIAN HABITAT

HABITAT ENHANCEMENT PROPOSALS

Six wetland habitat enhancement projects were considered this year. The Habitat Protection Committee reviewed the project proposals and the department's technical and programmatic evaluations and visited selected project areas. The HPC recommended the department not fund any of these projects at the present time. The HPC felt these projects, while they may have merit, are less critical than other potential projects to protect wetland habitat which are threatened by the increasing pace of subdivision in the Flathead Valley. Rather, the HPC recommended the department proceed with efforts to protect the McGregor Meadows Ranch as a first priority.

WETLAND/RIPARIAN HABITAT MITIGATION IMPLEMENTATION PLAN

In August 1993, the department initiated a short-term project to write a Wetland / Riparian Habitat Mitigation Implementation Plan. This plan is being developed with extensive public involvement and in full compliance with the Montana Environmental Policy Act. When completed, it will provide guidance for selecting and implementing habitat protection projects. The draft EA or EIS will be completed by February 28, 1994.

MAJOR ACTIVITIES PLANNED FOR FY94:

The major activities planned for FY94 are listed below. The projected budget for the Habitat Protection Project is presented in Table 12.

1. Complete the Wetland / Riparian Habitat Mitigation Implementation Plan.

2. Review and consider proposals for cooperative wetland habitat projects with land managing agencies.

3. Implement selected portions of the Columbian Sharp-tailed Grouse Mitigation Implementation Plan. Continue to identify and develop opportunities for projects to enhance palouse prairie habitats in the Tobacco Plains.

4. Develop habitat protection project proposals. Projects may include palouse prairie, wetland, or riparian habitat acquisition / protection.

Table 12. Budget summary for Habitat Protection Project, FY93 and 94.

Budget Category	FY93 (Planned)	FY93 (Actual)	FY94
PERSONAL SERVICES	$35,456	$22,137	$44,359
OPERATIONS AND MAINTENANCE	$7,800	$5,012	$7,800
EQUIPMENT	$0	$0	$0
sub-total	$43,256	$27,149	$52,159
DEPARTMENT OVERHEAD	$8,348	$5,240	$5,685
TOTAL	**$51,604**	**$32,389**	**$57,844**

NONGAME WILDLIFE MONITORING PROJECT

This project was designed to monitor the effects of ongoing habitat enhancement work at Hungry Horse and Libby on breeding bird communities and to determine whether habitat enhancement prescriptions effectively restore habitat. This project reflects growing concern in the wildlife community for the status and trend of certain neotropical migrant songbirds. Studies in the eastern US have shown long-term declines in selected songbird species.

The Nongame Wildlife Monitoring Project does not address a specific wildlife loss, mitigation goal, or project listed in Table 4 of the Council's 1987 Fish and Wildlife Program. Rather, it addresses a need for additional monitoring of the habitat enhancement projects. Nongame birds are widely recognized as one of the best indicators of habitat quality, and inhabited all of the habitats lost in the project areas.

This project was discussed at Wildlife Mitigation Advisory Committee meetings in 1991, 1992 and 1993. In March 1993, the department issued its decision to implement the project. Activities during FY93 focused on locating monitoring sites and conducting point counts. We also assisted the Forest Service by establishing and running pilot monitoring transects. Portions of the Executive Summary from the FY93 report (Casey 1994, in prep) are included.

EXECUTIVE SUMMARY

The Nongame Bird Monitoring project was initiated during April 1993. The primary objectives of the project are to identify those nongame bird species present in the Libby and Hungry Horse big game habitat enhancement project areas, their habitat affinities, and their response to habitat enhancement. Activities for FY93 included the selection of monitoring sites and collection of point-count data in both project areas. We also contracted with the U.S. Forest Service to conduct monitoring transects on both the Kootenai and Flathead National Forests.

Monitoring sites were selected using aerial photos, long-term management plans and treatment unit maps. We selected over 130 potential sites in each area, with ground-truthing, status of enhancement efforts and logistics (i.e. travel time between sites) determining our final sample size.

Our final 1993 sample size at Firefighter was 101 monitoring points. Our 40 control sites included the stratified random sites selected for elk monitoring, as well as paired sites adjacent to treatment sites. The 61 remaining points were in treatment units. Most (46, or 75%) were in units selected for timber harvest, and 40 of these had yet to be cut. Data collected from these sites will allow comparisons of breeding bird communities before and after treatment, between treatment types, and between treated and untreated (control) sites within particular cover types.

We conducted 10-minute point counts at each monitoring site. We conducted 3 replications at 61 sites, including most of the treatment sites. A total 251 point counts were conducted in the Firefighter project area.

Our final 1993 sample size at Libby was 115 monitoring sites. Most of the treatments at Libby are large (>100 ac); frequently entire stands or hillsides comprise a treatment unit. For this reason, we did not select paired control sites at Libby, but rather attempted to sample the full variation of treated (and as yet untreated) enhancement sites. We established monitoring points in most of the treatment units identified in the long-term plan for the Libby project area. These included 63 timber harvest units, 25 slash and burn units, and 18 sites scheduled for prescribed fire. We conducted 283 point counts in the Libby project area. Three replicates were conducted at 63 sites.

We contracted with the Forest Service to conduct 5 pilot monitoring transects on each of the Kootenai and Flathead National Forests. These transects of 10, 10-min. point counts provide broad, geographic trend data. Sites were selected to complement our other point count efforts, by sampling habitats and areas not represented in our enhancement monitoring effort.

All data compilation and analysis is being conducted using standardized techniques, and coordinated with other researchers in western to ensure compatibility and to provide for larger samples in the analysis of bird distribution and habitat relationships. Our 634 point counts generated over 6000 bird records. Analysis of the relationship between the number of replicates and species recorded at a point is underway, and will help in the development of future years' work plans.

Fifty-seven bird species were recorded at the Firefighter points. Five species, the Swainson's Thrush, Dark-eyed Junco, Yellow-rumped Warbler, Red-breasted Nuthatch, and Western Tanager, comprised 55% of all birds recorded at Firefighter. These are all generally forest interior species, though juncos and Yellow-rumped Warblers use a variety of open habitats as well. Thirty-three species were recorded as less than 1% of the records, including species typical of early successional stages such as Brown-headed Cowbird, Calliope Hummingbird, Rufous-sided Towhee, Mountain Bluebird, Tree Swallow, and Three-toed Woodpecker. The latter 2 species, adapted to open habitats with snags, apparently responded well to canopy removal in those units where remaining snags were inaccessible to firewood cutters.

The breeding bird community in the Libby project area was more diverse than Firefighter, with 81 species recorded. The five most common species were Swainson's Thrush, Dark-eyed Junco, Red-breasted Nuthatch, Western Tanager and Red Crossbill. They comprised 40% of the birds recorded. Thirty-six species occurred as less than 1% of the records, including Brown-headed Cowbird, Blue Grouse, Lazuli Bunting, Mountain Bluebird, Nashville Warbler, and Pygmy Nuthatch. These are all species which are expected to benefit from management for open stands of mature ponderosa pine.

Sixty-six species of birds, including 43 neotropical migrant species, were identified during at least one monitoring transect on either of the two forests. Forty-three species were recorded along the five transects on the Flathead, and 54 species were recorded along the 5 Kootenai transects. A summary report was submitted to each forest and to the USFS Regional office.

MAJOR ACTIVITIES PLANNED FOR FY94

Activities in FY94 will focus on conducting replicated point counts at a representative sample of treatment and paired control points. These will include most of the sites used in FY93 as well as additional sites included to represent habitat or treatment types or their controls not adequately represented in FY93. A budget summary for Fiscal years 1993 and 1994 is given in Table 13. The major activities planned for FY94 are listed below:

1. Conduct breeding bird surveys in a representative sample of treatment and control areas on the Koocanusa and Flathead project areas.

2. Conduct Ecodata plots at a representative sample of monitoring sites.

3. Determine the key habitat features which are correlated with key bird species presence and abundance.

4. Compile and analyze point count and habitat data.

5. Assist department Wildlife Management Area, Parks or Fishing Access Area managers develop watchable wildlife interpretive materials.

6. Write quarterly and annual reports summarizing data collected to date.

Table 13. Budget summary for Nongame Wildlife Monitoring Project, FY93 and 94.

Budget Category	FY93 (Planned)	FY93 (Actual)	FY94
PERSONAL SERVICES	$57,474	$16,214	$58,783
OPERATIONS	$10,300	$5,838	$11,300
EQUIPMENT	$1,000	$166	$3,000
sub-total	$68,774	$22,218	$73,083
DEPARTMENT OVERHEAD	$13,273	$5,240	$7,966
TOTAL	**$82,047** [1]	**$32,389**	**$81,049**

1. This total reflects the projected budget for a full year. Because this project was planned to start at mid year, the projected expenditure was $59,838. The actual expenditure was considerably less because the project was not initiated until April.

FINANCIAL SUMMARY

This report summarizes financial activity in the Trust Account and the Wildlife Mitigation Program during the period, July 1, 1992 to September 30, 1993. This period was selected because activities, and therefore expenses, for habitat enhancement activities completed by the US Forest Service are reported for the Federal fiscal year.

FUND BALANCE

The balance of funds in the Fish and Wildlife Mitigation Trust Account as of September 30, 1993 was $8,698,100 (Table 14). That total included $8,000,000 principal, $471,973 balance of funds from the Habitat Protection Grant, and $226,127 in unexpended earnings.

PAYMENTS

During FY93, we received two payments. The annual payment of $2,000,000 was received as scheduled on December 29,1992. Also on December 29, BPA transferred $500,000 from the Habitat Protection Grant to the State of Montana. That transfer was completed to give Montana more flexibility in developing and implementing habitat protection projects, and was consistent with a recommendation by the Wildlife Mitigation Advisory Committee. These grant funds will be treated as earnings and will be available for use. The WMAC also recommended the department use these funds for wetland habitat protection or enhancement projects.

REVENUE

Total revenue into the Trust Account during the report period, $556,548 (Table 15), reflected a continued decline in interest rates on short and mid-term investments. Earnings deteriorated during FY93 from an average yield of 5.06 to 4.65 % in June 1992 and September 1993, respectively. Since June 1992, interest rates earned by funds in the state's Short-term Investment Pool (STIP) fluctuated between 4.10 and 3.23% in February 1993 and June 1993, respectively. During this report period, the Montana Board of Investments has placed $4,893,822 in mid-term investments (Table 16). Yields for these investments varied from 3.475 to 6.000%. The department has asked the BOI to review the investment strategy for the Trust Account in an effort to increase earnings.

EXPENDITURES

Expenditures for the report period totalled $314,942 (Table 17).

MONTANA DEPARTMENT OF FISH, WILDLIFE AND PARKS
SCHEDULE OF ASSETS, LIABILITIES AND FUND BALANCE
BPA WILDLIFE MITIGATION TRUST FUND
September 30, 1993

ASSETS		
Cash in Treasury	$7,682	
STIP Purchased Interest	$483	
Interest Receivable	$50,669	
Long Term Security Premium	$1,092	
L/T Federal Securities at Par	$3,493,611	
L/T Corporate Securities at Par	$3,600,211	
Short-term Investment Pool (STIP)	$1,541,100	
TOTAL ASSETS	$8,694,848	
LIABILITIES		
L/T Security Discount	$8,755	
Uncleared Collections	$14,913	
TOTAL LIABILITIES	$23,668	
FUND BALANCE (Assets - Liabilities)		$8,671,180
FUND BALANCE		
Fund Balance - Unreserved principal	$8,000,000	
Fund Balance - Unexpended earnings	$172,287	
Grant Balance - Unexpended Revenue	$471,973	
REVENUE (FY94 to date)		
Budgeted Revenue	$73,098	
Annual Payment	$0	
TOTAL REVENUE	$73,098	
EXPENDITURES		
Budgeted Expenditures	$40,537	
Prior Year Expend/Deductions Adj	($98)	
Non-Budgeted Prior Year Transfers Out	$5,543	
TOTAL EXPENDITURES	$46,178	
FUND BALANCE		$8,698,100

Table 14. Schedule of assets and liabilities and fund balance for the Trust Account.

MONTANA DEPARTMENT OF FISH, WILDLIFE AND PARKS
SCHEDULE OF REVENUE
BPA WILDLIFE MITIGATION TRUST FUND

July 1, 1992 - September 30, 1993

REVENUE		
U.S. Treasury Notes	$420,247	
STIP Interest	$107,917	
Security Profit on Sales	$18,460	
Amortization Bond Discounts	$6,191	
Lending Income (Long Term)	$4,697	
Industrial Bonds	$355	
Misc Income	$30	
Amortization Bond Premium	($112)	
Administrative Cost Transfer	($1,237)	
TOTAL REVENUE		$556,548

Table 15. Income from all investments in the Wildlife Mitigation Trust Account, July 1, 1992 through September 30, 1993.

Maturity Date	Settlement Date	Investment	Par Value	Coupon Rate	FY94 * Revenue
11-15-94	3-13-92	U. S. Treasury Notes	$500,000	6.000%	$30,000
7-17-95	7-17-92	Saloman, Inc.	$500,000	4.375	$22,500
11-15-95	11-16-92	U. S. Treasury Note	$500,000	5.125%	$25,625
1-22-96	1-22-93	Federal Home Loan Bank	$500,000	5.000%	$25,000
5-15-96	5-21-93	U. S. Treasury Notes	$200,000	4.250%	$8,500
5-15-96	5-24-93	U. S. Treasury Notes	$300,000	4.250%	$12,750
6-1-96	6-3-93	Smith Barney Holdings	$200,000	5,375%	$10,750
9-3-96	9-2-93	John Hancock Capitol Corp Min PP	$500,000	4.600%	$23,000
11-20-96	5-11-93	Securitized Triple A Receivables	$300,000	3.475%	$10,425
3-15-97	4-14-92	Fina: GECC	$400,000	6.200%	$24,800
4-10-97	4-10-92	Federal Home Loan Bank	$500,000	3.780%	$18,900
4-21-97	7-21-92	Student Loan Marketing Assn.	$300,000	3.820%	$11,460
4-21-97	7-21-92	Student Loan Marketing Assn.	$200,000	3.820%	$7,640
5-15-97	5-20-92	FINA: Heller Financial	$500,000	7.750%	$38,750
9-29-97	1-29-93	FHLB Floating Rate Note	$500,000	8.870%	$19,350
12-31-97	1-11-93	U. S. Treasury Note	$500,000	6.000%	$30,000
5-15-98	4-19-93	Hyundai Auto Receivable Trust	$399,822	4.300%	$17,192
5-15-98	5-12-93	Nellie Mae, Inc	$294,000	4.050%	$11,907
		Total	$7,193,822	4.905	$347,924

* Interest is received every 6 months from maturity date. Revenue is based on coupon rate times par value.

Table 16. List of mid-term investments purchased for the Mitigation Trust Account during FY93.

MONTANA DEPARTMENT OF FISH, WILDLIFE AND PARKS
SCHEDULE OF EXPENDITURES
BPA WILDLIFE MITIGATION TRUST FUND

July 1, 1992 - September 30, 1993

PERSONAL SERVICES			
Salaries	$6,427		
Hourly Wages	$102,262		
Employee Benefits	$26,508		
Total Personal Services		$135,197	
OPERATING EXPENSES			
Contracted Services	$125,611		
Supplies and Materials	$11,152		
Communications	$2,180		
Travel	$17,354		
Rent	$17,760		
Utilities	$576		
Repairs and Maintenance	$3,819		
Other	$512		
Total Operating Expenses		$178,964	
EQUIPMENT	$923	$923	
TOTAL EXPENDITURES			$314,942

Table 17. Schedule of expenditures in the Wildlife Mitigation Trust Account, July 1, 1992 through September 30, 1993.

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